UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,463	06/23/2005	Roger Griffiths	21.1068	2771

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2008*.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8 and 10-15* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1,3-8 and 10-15* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *23 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☒ All   b)☐ Some * c)☐ None of:
   1.☒ Certified copies of the priority documents have been received.
   2.☐ Certified copies of the priority documents have been received in Application No. _____.
   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-8, and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by

"Real-Time LWD: Logging for Drilling", Bargach et al. (referred hereafter Bargach et al.).

Referring to claim 1, Bargach et al. disclose a method of evaluating changes for a

wellbore interval, comprising:

obtaining first log data acquired by a logging sensor (page 61, 1st col., Multidepth Vision:

1st paragraph) during a first pass over the wellbore interval (page 62, whole 3rd col.; Figure on

page 62: "Track 1 shows elapsed time between bit penetration and resistivity measurement";

page 74, 1st col., last paragraph);

obtaining second log data at a time later than the first log data, said second log data being

acquired by the logging sensor (page 61, 1st col., Multidepth Vision: 1st paragraph) during a

second pass over the wellbore interval (page 62, whole 3rd col.; Figure on page 62: "Track 1

shows elapsed time between bit penetration and resistivity measurement"; page 74, 1st col., last

paragraph);

calculating a plurality of delta values between the first log data and the second log data,

wherein each delta value is calculated by taking a difference between a parameter of the first

and second log data (Figure on page 61; Figure on page 62 showing Track 4 represents VISION

resistivities (<u>attenuation resistivity and phase shift resistivity</u>); page 74, 1st col., last paragraph;

page 78, 1st col., 1st paragraph; page 78, 1st col., 1st paragraph citing delta Rho (e.g., $\Delta\rho$ for

density calculation);

deriving an observed effect using the plurality of the delta values (Figure on page 62

showing Track 4 represents VISION resistivities (attenuation and phase shift); page 78, 1st col.,

1st paragraph); and

identifying a correlation between the observed effect and a causal event (Figure on page

68; page 75, 1st, 2nd, and 3rd column and the Figure on page 75; page 77, 1st col., Recognizing

and Preventing Problems: 1st, 2nd, and 3rd paragraphs); and

displaying the correlation on a display device so that changes for the wellbore interval

can be evaluated as well the probable causal event responsible for the changes (Figure 1 on

page 72; page 75, 1st, 2nd, and 3rd column and the Figure on page 75).

Referring to claim 3, Bargach et al. disclose a method of evaluating changes for a

wellbore interval, wherein the logging sensor measures at least one parameter selected from the

group consisting of gamma ray, resistivity, neutron porosity, density, ultrasonic caliper, and

sigma (page 61, 1st col., Multidepth Vision: 1st paragraph).

As to claim 4, Bargach et al. disclose a method of evaluating changes for a wellbore

interval, wherein the logging sensor is disposed on an integrated measurement tool (page 61, 1st

col., Multidepth Vision: 1st and 2nd paragraphs to 2nd col. to 3rd col.).

Referring to claim 5, Bargach et al. disclose a method of evaluating changes for a wellbore interval, wherein the correlation is a depth correlation (Figure on page 68; page 74, 1st col., last paragraph).

As to claim 6, Bargach et al. disclose a method of evaluating changes for a wellbore interval, wherein the correlation is a time correlation (Figure on page 68; page 74, 1st col., last paragraph).

Referring to claim 7, Bargach et al. disclose a method of evaluating changes for a wellbore interval, further comprising:

calculating a relative effect using a sensitivity factor to adjust the correlation (Figure on page 68; page 74, 1st col., last paragraph); and

displaying the correlation and the relative effect on a display device (Figure on page 68; page 74, 1st col., last paragraph).

As to claim 8, Bargach et al. disclose a system for evaluating changes for a wellbore interval comprising:

a well log data acquisition system for acquiring first log data and second log data, at a time later than said first log data, from a logging sensor during a plurality of passes over the wellbore interval (page 61, 1st col., Multidepth Vision: 1st and 2nd paragraphs to 2nd col. to 3rd col.); and

a well log data processing system for:

calculating a plurality of delta values between the first log data and the second log data, wherein each delta value is calculated by taking a difference between a parameter of the first and second log data (Figure on page 61; Figure on page 62 showing Track 4 represents VISION

resistivities (resistivities for attenuation and phase shift); page 74, 1st col., last paragraph; page

78, 1st col., 1st paragraph; page 78, 1st col., 1st paragraph citing delta Rho (e.g., $\Delta\rho$ for density

calculation);

deriving an observed effect using the plurality of the delta values (Figure on page 62

showing Track 4 represents VISION resistivities (attenuation resistivity and phase shift

resistivity); page 78, 1st col., 1st paragraph); and

identifying a correlation between the observed effect and a causal event (Figure on page

68; page 75, 1st, 2nd, and 3rd column and the Figure on page 75; page 77, 1st col., Recognizing

and Preventing Problems: 1st, 2nd, and 3rd paragraphs); and

displaying the correlation on a display device so that changes for the wellbore interval

can be evaluated as well the probable causal event responsible for the changes (Figure 1 on

page 72; page 75, 1st, 2nd, and 3rd column and the Figure on page 75).

As to claim 10, Bargach et al. disclose a system for evaluating changes for a wellbore

interval, wherein the logging sensor measures at least one parameter selected from the group

consisting of gamma ray, resistivity, neutron porosity, density, ultrasonic caliper, and sigma

(page 61, 1st col., Multidepth Vision: 1st paragraph).

Referring to claim 11, Bargach et al. disclose a system for evaluating changes for a

wellbore interval, wherein the logging sensor is disposed on an integrated measurement tool

(page 61, 1st col., Multidepth Vision: 1st and 2nd paragraphs to 2nd col. to 3rd col.).

As to claim 12, Bargach et al. disclose a system for evaluating changes for a wellbore

interval, wherein the correlation is a depth correlation (Figure on page 68; page 74, 1st col., last

paragraph).

Referring to claim 13, Bargach et al. disclose a system for evaluating changes for a wellbore interval, wherein the correlation is a time correlation (Figure on page 68; page 74, 1st col., last paragraph).

As to claim 14, Bargach et al. disclose a system for evaluating changes for a wellbore interval, further comprising a well log data processing system for calculating a relative effect using a sensitivity factor to adjust the correlation (Figure on page 68; page 74, 1st col., last paragraph); and displaying the correlation and the relative effect on a display device (Figure on page 68; page 74, 1st col., last paragraph).

Referring to claim 15, Bargach et al. disclose a computer system for evaluating changes for a wellbore interval, comprising:

a processor;

a memory;

a storage device;

a computer display; and

software instructions stored in the memory for enabling the computer system under control of the processor (page 61, 1st col., Multidepth Vision: 1st and 2nd paragraphs to 2nd col. to 3rd col.), to perform:

gathering first log data from a logging sensor during a first pass over the wellbore interval (page 62, whole 3rd col.; Figure on page 62: "Track 1 shows elapsed time between bit penetration and resistivity measurement"; page 74, 1st col., last paragraph);

gathering second log data, at a time later than said first log data, from the logging sensor during a second pass over the wellbore interval (page 62, whole 3rd col.; Figure on page 62:

"Track 1 shows elapsed time between bit penetration and resistivity measurement"; page 74, 1st col., last paragraph);

calculating a plurality of delta values between the first log data and the second log data, wherein each delta value is calculated by taking a difference between a parameter of the first and second log data (Figure on page 61; Figure on page 62 showing Track 4 represents VISION resistivities (attenuation resistivity and phase shift resistivity); page 74, 1st col., last paragraph; page 78, 1st col., 1st paragraph; page 78, 1st col., 1st paragraph citing delta Rho (e.g., $\Delta\rho$ for density calculation);

deriving an observed effect using the plurality of the delta values (Figure on page 62 showing Track 4 represents VISION resistivities (attenuation and phase shift); page 78, 1st col., 1st paragraph);

identifying a correlation between the observed effect and a causal event (Figure on page 68; page 75, 1st, 2nd, and 3rd column and the Figure on page 75; page 77, 1st col., Recognizing and Preventing Problems: 1st, 2nd, and 3rd paragraphs); and

displaying the correlation on a display device so that changes for the wellbore interval can be evaluated as well the probable causal event responsible for the changes (Figure 1 on page 72; page 75, 1st, 2nd, and 3rd column and the Figure on page 75).

Response to Arguments

Applicant's arguments filed 5/7/08 have been fully considered but they are not persuasive.

Referring to claims 1, 8, and 15, Applicant argues that:

"The amended feature i) is described on paragraph 33, wherein a delta value for a formation is calculated by taking the difference between data associated with a parameter for the different logging passes. Examiner points to the figure on page 62 of Bargach with Track 4 representing VISION resistivities, but there is no teaching of calculating a delta value by taking the difference. Instead track 4 is merely shown to represent Vision resistivities, specifically attenuation and phase-shift. Not only are these different parameters, but there is no indication of calculating a difference."

Answer: Bargach discloses calculating a plurality of delta values between the first log data and second log data by taking a difference between a parameter of the first and second log data, e.g., phase-shift resistivity for each phase resistivity, on the Figure on page 62 showing attenuation resistivity and phase-shift resistivity; the phase-shift resistivity is resulting from calculated difference phase (phase-shift or $\Delta\phi$) resistivities.

Thus, bargach does disclose calculating a plurality of delta values between the first log data and the second log data, wherein each delta value is calculated by taking a difference between a parameter of the first and second log data as cited in claims 1, 8, and 15.

Applicant further argues that:

"The amended feature ii) is described in paragraph [0046] of the present application (second sentence), wherein the invention allows the determination of a change, but also the identification of the probable causal event of the change. This further effect of determined the cause from the observed effect is accomplished by the already claimed step of 'identifying a correlation' (see also see paragraph [0035]). Thus, using the further correlation analysis the claimed invention is able to display to the user a probably cause of the wellbore change."

Answer: Bargach discloses on the Figure on page 75 as following:

"Time-lapse GeoVISION resistivity images with the elapsed time (gray) and mud weight (ECD, green) curves superimposed. On the left is shown the position of the GeoVISION sensors relative to the bit. The first image (A) was made as the bit drilled to X2017 ft (white line) and shows a faint axial fracture. At that TD, the BHA was worked for 6 hours to clean out cuttings. An image made from memory data acquired during this period (B) shows a wide induced fracture. Images of the lower interval (C) acquired after drilling resumed, approximately 7 hours after the first image, shows <u>a dramatic change</u> in the borehole for the interval where the BHA was worked, compared to the newly drilled interval below. Spikes in the ECD curve during the period the pipe was worked demonstrated that the <u>borehole failure</u> shown in the apparent borehole breakout in (B) and (C) is actually induced borehole failure <u>caused by high ECD</u>."

Thus, Bargach does disclose displaying a correlation (between high ECD and wellbore failure) on a display device so that changes for the wellbore interval can be evaluated as well the probable causal event responsible for the changes (e.g., wellbore failure caused by high ECD).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Invasion in Space and Time", Peeters et al., SPWLA 40th Annual Logging Symposium, 31 May – 3rd June, 1999.

Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to TOAN M. LE whose telephone number is (571)272-2276. The

examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Toan Le   /Michael P. Nghiem/
                                                           Primary Examiner, GAU 2863

August 11, 2008